## (19) World Intellectual Property Organization International Bureau





(43) International Publication Date 31 March 2005 (31.03.2005)

## (10) International Publication Number WO 2005/027840 A2

(51) International Patent Classification7:

A61K

(21) International Application Number:

PCT/US2004/030233

(22) International Filing Date:

15 September 2004 (15.09.2004)

(25) Filing Language:

English

(26) Publication Language:

**English** 

(30) Priority Data:

60/503,617 60/504,501

15 September 2003 (15.09.2003) 15 September 2003 (15.09.2003)

115

- (71) Applicants (for all designated States except US): CHI-RON CORPORATION [US/US]; 4560 Horton Street, Emeryville, CA 94608-2916 (US). NATIONAL IN-STITUTES OF HEALTH, NATIONAL CANCER INSTITUTE [US/US]; Center For Cancer Research, Vaccine Branch, Section on Immune Biology of Retroviral Infection, 41 Medlars Drive MSC 5065, Building 41, Room D804, Bethesda, MD 20892-5065 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): BARNETT, Susan, W. [US/US]; Chiron Corporation, P.O. Box 8097, Emeryville, CA 94662-8097 (US). GÓMEZ-ROMÁN, Victor, Raul c/o National Institutes of Health, National Cancer Institute [MX/US]; Center for Cancer Resarch. Vaccine Branch, Section on Immune Biology of Retroviral Infection, 41 Medlars Drive MSC 5065, Building 41, Room D804, Bethesda, MD 20892-5065 (US). LIAN, Ying [CN/US]; Chiron Corporation, P.O. Box 8097, Emeryville, CA 94662-8097 (US). PENG, Bo c/o National Institutes of Health, National Cancer Institute [US/US]; Center for Cancer Research, Vaccine Branch, Section on Immune Biology of Retroviral Infection, 41 Medlars Drive MSC 5065, Building 41, Room D804,

Bethesda, MD 20892-5065 (US). ROBERT-GUROFF, Marjorie c/o National Institutes of Health, National Cancer Institute [US/US]; Center for Cancer Research, Vaccine Branch, Section on Immune Biology of Retroviral Infection, 41 Medlars Drive MSC 5065, Building 41, Room D804, Bethesda, MD 20892-5065 (US). SRIVAS-TAVA, Indresh, K. [IN/US]; Chiron Corporation, P.O. Box 8097, Emeryville, CA 94662-8097 (US).

- (74) Agents: MORAN, Michael, J. et al., Chiron Corporation, Intellectual Property R-338, P.O. Box 8097, Emeryville, CA 94662-8097 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM. AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

## Published:

without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: COMBINATION APPROACHES FOR GENERATING IMMUNE RESPONSES

(57) Abstract: The present invention relates to methods, polynucleotides, and polypeptides encoding immunogenic HIV polypeptides derived from different strains within an HIV subtype and/or immunogenic HIV polypeptides from different subtypes. Uses of the polynucleotides and polypeptides in combination approaches for generating immune responses are described. The combination approaches described herein have been shown to induce broad and potent neutralizing activity against diverse HIV strains from multiple strains within a given subtype and against diverse subtypes. Formulations of compositions for generating immune responses and methods of use for such compositions are also disclosed.



